PRIVILEGED AND CONFIDENTIAL

ENVIRONMENTAL INVESTIGATION
ROTH BROS. SMELTING CORP. - PLANT 2
EAST SYRACUSE, NEW YORK

SECTION 1 OF 2

by

H&A of New York
Rochester, New York

for

Nixon, Hargrave, Devans & Doyle
Rochester, New York

File No. 70185-40

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EXECUTIVE SUMMARY

H&A of New York performed an environmental investigation of Plant 2 of the Roth Bros. Smelting Corporation site in East Syracuse, New York. Roth Bros. Smelting Corporation is a secondary lead smelter which smelts and refines lead from metallic scrap, drosses and production by-products. Plant 2 has operated since the 1950's. The intent of the investigation was to evaluate several site areas for the potential presence of hazardous materials.

Based on site information available and a walkover at the outset of this project, the investigation was performed to address the following areas of concern: (1) an area which received fill of an unknown nature over the time period from 1976 to 1979; (2) a truck maintenance area; (3) SPDES Outfalls 001 and 002 ditches; (4) a former transformer location; and (5) the southwest corner of Plant 2. Background/native soils were also collected. In order to evaluate these areas and based on available information, H&A developed a site-specific investigation program consisting of a site walkover, review of readily-available information regarding site use, history and local geologic setting, a limited subsurface exploration and sampling program and laboratory analyses.

In summary, 34 samples were collected and analyzed for total metals associated with the smelting process (lead, chromium and cadmium), TCLP metals (lead, chromium and cadmium), oil and grease (by EPA Method 9070) which is regulated under SPDES discharge limits, and PCBs (by EPA Method 8080) which may be associated with some of the compounds which are smelted. The oil and grease analyses indicated concentrations above background/native soils were found in several areas; however, the highest concentrations and those with visibly stained soils were observed at the truck maintenance area and the former transformer location. These areas had low or non-detectable PCB concentrations. It is concluded, therefore, that the oil and grease values are likely related to non-PCB oil spillage in these areas. The stained soils would be considered a solid non-hazardous waste under current NYSDEC regulation, provided they are not ignitable. They could be disposed at a NYSDEC-permitted sanitary landfill provided they are accepted by the landfill. There was sufficient staining in this area that, in H&A's opinion, free oil product may be present in the truck maintenance area's subsurface and on groundwater. This initial phase of the investigation was not intended to address this issue.

Total lead and total cadmium concentrations were detected in soils. The high concentrations of total lead and cadmium associated with the fill soils may be attributable to several factors including:

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- coal-type cinders found in several samples recovered from test pits.

- presence of unrecognizable (even under low magnification) particles of dust containing lead and cadmium compounds from individual emissions and automobiles in the area, or mixed with fill soils or sediment.

Toxicity Characteristic Leaching Procedure (TCLP) analyses of the samples collected showed the majority of samples to be non-hazardous for these compounds by the TCLP characteristic. Selected samples from an approximately 250 x 150± ft. area in the fill northeast of Plant 2 had TCLP concentrations higher than the USEPA threshold of 5 ppm, and would therefore be considered as characteristically hazardous. Samples from Outfall 001 and the baghouse areas also had TCLP lead results which exceeded 5 ppm. A review of the total lead concentrations and TCLP results indicate that it is the chemical form (type of speciation) of lead in the samples that is controlling lead leachability, and not the total concentration.

Results of PCB analyses showed the majority of samples to have PCB concentrations less than the 25 ppm soil clean-up threshold for industrial areas established by USEPA. One location from the fill area had a PCB concentration above the 25 ppm threshold. This sample location also had elevated lead TCLP results.

Historical information on plant operations indicated baghouse dust from the lead smelter may have been placed with other fill in the fill area. Comparison of the elevated lead TCLP/PCB samples to other site samples showed no marked visible differences, even under low magnification. Further, during test pit explorations and sampling, no readily-recognizable layers, seams or accumulation of smelter baghouse dust were observed. Therefore, no waste, readily classified as K069 (baghouse dust from secondary smelter activities), was visibly apparent in the explorations conducted. The selected samples from the fill area, baghouse area and Outfall 001 do however indicate that some of the areas explored contain TCLP characteristics and PCB hazardous material. Review of lead chemical properties indicate that industrially produced lead tends to have considerably higher solubility than naturally occurring lead, or lead that has been reciprocated to a more stable (carbonate, hydroxide or other) form. Therefore, it is likely that the areas of high TCLP lead also contain industrially derived lead, still in relatively soluble form. Lastly, review of aerial photos,

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conducted after test pits had been completed to get more information on the nature of the fill indicated that additional fill may extend beneath the currently paved area north of Plant 2.

In order to evaluate the TCLP lead and PCB occurrences on the Plant 2 property it will be necessary to determine the chemical form of lead that is controlling leachability and the areal extent of such material. An investigation of the areal extent of the material would be necessary to determine the extent of TCLP lead and PCB materials. Further, it is currently unknown if the lead is sufficiently leachable to be migrating into and affecting site groundwater. Therefore, groundwater sampling and analyses would be necessary.

To evaluate these matters, the following recommendations are made and apply to the Plant 2 fill area and the baghouse/dross area, except where indicated otherwise:

- The program of grid sampling in the fill should be extended south to the currently paved area up to the Plant 2 building. Test borings would be required rather than test pits to limit pavement disturbance.

- Samples of fill and/or soil would be selected as previously, based on a random number generation for sample selection from the grid pattern. A limited number of additional samples would be selected from already explored areas to allow comparison of sample matrix. Commercial lab analyses could likely be limited to lead (total and TCLP) analysis and PCB analysis. It will also be necessary to review chemical content and form of lead in the baghouse dust with Roth Bros. so as to allow development of a procedure to distinguish industrially-derived lead from stable natural or reciprocated lead.

- Three to four of the borings should be converted to groundwater monitoring wells to evaluate possible effects on site groundwater in each of the two areas (fill area and baghouse/dross area). Sample analyses should concentrate on lead (total and soluble), related naturally occurring metals, and PCBs.

- Two to three borings should be placed in the maintenance shop/underground gas tank area to further evaluate subsurface distribution of the oil-stained soils. If staining progresses to depths greater than 8 to 10± ft. then selected borings should be converted to groundwater monitoring wells to evaluate free product presence and thickness. Lab analyses of samples would be limited to petroleum hydrocarbons and its volatile constituents.

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The basis of our conclusions and recommendations, and a more detailed description of the investigation performed is contained in the text of this report.

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I. INTRODUCTION

H&A of New York (H&A) has performed an environmental investigation on the Roth Bros. Plant 2 property in East Syracuse, New York, so as to assist Nixon, Hargrave, Devans & Doyle (NHDD) and Roth Bros. Smelting Corporation in identifying and evaluating areas of oil and hazardous material occurrence on the property.

Roth Bros. Smelting Corporation (Roth Bros.) operates two plants (Plant 1 and Plant 2) which are adjacent to one another. This investigation addresses operations conducted on Plant 2 property. Based on H&A's review of site operations and information provided in the RFP, it was determined that a limited program of subsurface explorations and environmental sampling was necessary to screen several site areas for potential hazardous materials that may be associated with plant operations.

Our investigation consisted of a site walkover; review of readily-available information concerning surface topography and water conditions and subsurface soil, bedrock and groundwater conditions; review of readily-available aerial photography for the site and the New York State Department of Environmental Conservation (NYSDEC) Registry of Inactive Hazardous Waste Sites; a limited subsurface investigation consisting of test pit explorations and limited sampling and laboratory analysis of soil and stream sediments.

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II. SITE LOCATION AND CURRENT CONDITIONS

2-01. SITE LOCATION

The site is located at 6223 Thompson Road in East Syracuse, New York (See Project Locus, Figure 1). Roth Bros. Plant 2 is bounded by industrial property on the north; a construction equipment rental company, Oberdorfer Foundries, Inc. and Plant 1 of Roth Bros. on the east; railroad tracks on the south; and an industrial park on the west.

Plant 2 property is generally rectangular in shape. Roth Bros. also own a strip of land associated with a right-of-way off Thompson Road. This section of the property is located at the northeast edge of Plant 2, and is bounded by a construction equipment rental company to the north, Oberdorfer Foundries to the south and an access road to the east.

2-02. SITE OPERATIONS

The Roth Bros. Smelting Corp. was established in 1927. Their operations began at the Thompson Road site in the early 1950's (1,2*). Plant 2 was added in the mid-1950's. Currently, Roth Bros. occupies a 32-acre property and Plants 1 and 2 occupy over 200,000 sq. ft. of building space. The facility manufactures aluminum and lead ingots, billets and solder.

Roth Bros. reclaims non-ferrous metals and alloys through secondary smelting and refining of purchased scrap, drosses and production by-products (generally from drosses reclaimed in on-site solder operations) (3). Plant 1 is primarily used for smelting operations for aluminum. Historically, zinc alloying operations took place in Plant 1, however Roth Bros. is not currently involved with zinc alloying. Plant 2 is primarily used for the lead smelting operations.

Scrap pieces of metals are processed such that materials are separated from the valuable metal components through a series of physical and chemical reactions using refractory-lined furnaces. The end products are lead and aluminum with controlled amounts of impurities.

*Number refer to "References" listed at the end of this report.

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2-03. CURRENT CONDITIONS

A review of current site conditions was performed with Roth Bros. and NHDD personnel. A site walkover was conducted on 20 August 1990 by H&A of New York.

Observations of site activities at the Plant 2 property documented from this review and walkover are shown on Figure 2 (Site Plan) and described below:

- Plant 2 buildings are located on the southern half of the Plant 2 property. The majority of the ground surface in the vicinity of the Plant 2 buildings is paved. Oily staining was observed at the ground surface in the vicinity of the maintenance area on the east side of Plant 2.

- There is an oil/water separator located near the southwest end of Plant 2. The separator collects runoff and drainage from selected Plant 2 areas, settles solids and separates oils before conveyance to a SPDES outfall (designated 001) located along the western Plant 2 property boundary.

- The northern half of the property is unpaved and part of it has been used as a fill area; the remainder is wooded. Figure 2 shows the approximate boundary where the fill has been placed. The fill is generally graded, however, several piles of ungraded fill were observed in the northwest end of the fill area and appeared to contain primarily construction and demolition debris (sand, gravel, concrete, blacktop).

Work, storage, parking and other designated Plant 2 function areas are shown on Figure 2.

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III. SITE HISTORY AND PREVIOUS USAGE

3-01. HISTORICAL SITE USAGE

H&A of New York reviewed aerial photographs covering the site and vicinity. Photographic documentation is available through the U.S. Agricultural Stabilization and Conservation Service (4), U.S. Soil Conservation Service (5), the Onondaga County Department of Planning (6) and the Onondaga County Department of Transportation (7). In addition, Roth Bros. maintains limited photographic record of the site (2). Observations made regarding site development are described below.

1952: Plant 1 is present, although it is smaller than at the present. The eastern portion of Plant 1 appears to be brushy and wooded. The area where Plant 2 is presently located appeared to be an undeveloped parcel (field) (2).

1957: Plant 1 is expanded in size. Some surface debris is noted along the southern boundary of Plant 1 (2). Plant 2 has been built. The ground surface around the plant is unpaved at the time of the photo (2).

1959: Observations of Plant 2 operations in 1959 indicate the plant buildings were not as extensive as they are at the present. Parking appears to be generally along the southern end of the property. Two dark areas appear just south of buildings and may represent, low wet areas (7).

A drainage ditch crosses the property in an east-west direction near the center of the Plant 2 parcel. It appears to connect with a ditch on the east edge of the Plant 2 property.

The northern half of the Plant 2 property is undeveloped and appears to be a field. The northern-most section is lightly wooded and brushy.

1966: As in the 1959 photos, operations at Plant 2 are limited to the southern half of the site. A dark (possibly wet) area is again noted northeast of the Plant 2 building. The area from the Plant 2 building extending several hundred feet north is occupied by plant yard, apparently used for storage and handling of plant materials. Property north of the plant yard is undeveloped and appears to have grass and shrub cover. The drainage ditch is observed to cross the site in an east/west direction.

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Off-site, to the west and north of Plant 2, two areas appear disturbed, possibly from construction activities for the neighboring industrial park.

1978: Plant 2 operations appear to have expanded in a northerly direction when compared to the 1966 photo. The ground surface appears to be disturbed from the buildings to the ditch which crosses the site in an east-west direction. A portion of the disturbance appears to be associated with fill activities. The northern third of the Plant 2 property appears brushy/wooded and undeveloped.

A small building, observed east of the Plant 2 main building, is likely the current trailer repair shed/fabricating shop.

The parking area south of Plant 2 buildings appears to be approximately two times as large as it was in the 1966 photograph.

1981: Plant 2 operations appear similar to those observed in the 1978 photo.

1985: Plant 2 operations appear similar to those observed in the 1981 and 1978 photos.

3-02. PREVIOUS ENVIRONMENTAL INVESTIGATION

A limited amount of data was made available for H&A's use in evaluating the Plant 2 site. Six locations were sampled on Plant 2 property as follows:

- Aluminum Storage Area: Two sample locations (J8265, J8266) were sampled in the aluminum scrap storage area at the northwest corner of the Plant 2 main building. Analyses were conducted for semi-volatiles, total metals and TCLP metals.

  Semi-volatiles detected include:

  - Benzo(a)Anthracene at 400 and 520 ppm (estimated concentration).
  - Bis(2-Ethylhexyl Phthalate) at 12,000 and 25,000 ppm.
  - Benzo(a)Pyrene at 740 ppm (estimated concentration in one sample).

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The semi-volatiles listed above are products of combustion of fuels. Benzo(a) Pyrene is also a potential roadbed and asphalt leachate.

Total metals analyzed had detectable concentrations of lead, mercury and cadmium. However, metals analyzed by TCLP were not detected above EPA regulatory levels in most samples and therefore would not be considered hazardous by this characterization. Some samples did not contain lead above TCLP limits. Results are summarized below.

- Open Field to North: Two locations were sampled (J8267, J8268) north of Plant 2 buildings in an open area. Samples were analyzed for total metals and TCLP metals. Metals analyzed by TCLP were not detected above EPA regulatory action levels; therefore these soils are not considered hazardous by this characteristic.

- Drainage Ditch West: Two samples (J8269, J8270) collected from the drainage ditch along the west side of Plant 2 near Outfall 001 were analyzed for metals (total and TCLP), oil and grease, and PCBs.

  Of the metals detected, lead was detected at 7.2 ppm by TCLP, above the USEPA regulatory level of 5.0 ppm.

  Oil and grease was not detected above the laboratory detection limits in a water sample collected at the outfall.

  PCBs (polychlorinated byphenols) detected include Aroclor 1016/1242 (6.9 ppm) and Aroclor 1254 (1.6 ppm).

- Lead Dross Storage Area: Metals (total and TCLP) were analyzed in a soil sample (J8271) collected outside the lead dross storage shed on the west side of Plant 2. Lead by TCLP was detected at 12 ppm, above the TCLP regulatory level of 5 ppm.

- Drainage Ditch East: Three samples (J8272, J8273, J8274) from the drainage ditch near outfall 002 on the east side of Plant 2 were analyzed for semi-volatiles, metals (total and TCLP), PCBs and oil and grease.

  The semi-volatiles detected included benzo(a)anthracene (17,000 ppm estimated concentration) and bis 2-Ethylhexyl phthalate.

  Metals were not above USEPA regulatory levels when analyzed by TCLP for metals.

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Oil and grease was detected at 100,000 ppm. PCBs (Aroclor 1016/1242) were detected at 4.0 ppm.

3-03. POTENTIAL SOURCES OF OIL AND HAZARDOUS MATERIALS

Potential on-site sources of oil and hazardous materials are identified and described below.

Fill Area: On the northern portion of Plant 2, an extensive area (approximately 7 acres) of fill is present north of the paved area. It has been reported that baghouse dusts generated from on-site smelting operations were disposed with fill from 1976 to 1979. Other materials reportedly used for fill in this vicinity include construction and demolition debris associated with on-site activities (i.e. concrete, blacktop). It was also reported that materials associated with expansion of the adjacent industrial park were brought on-site for use as fill (9).

Lead Smelt Baghouses: Lead dusts generated from Plant 2 operations are collected in three baghouses located along the southwest property line (Figure 2). The waste is boxed at the baghouses and then stored as a hazardous waste. Roth Bros. maintains a Part 373 Permit to store hazardous materials. The waste was reportedly exported to England, where it was recycled for its tin content (1).

Truck Maintenance Areas: The maintenance shop is located at the southeast end of the main Plant 2 building (Figure 2). This area is used primarily for the maintenance of forklifts and other plant operating equipment. Roth Bros. operates a trailer maintenance shop and a fabricating shop along the east edge of Plant 2, adjacent to the railroad tracks.

Underground Tanks: Three underground storage tanks are reportedly located in the maintenance facility areas outside Plant 2 (Figure 2). They are as follows:

- 2,000 gallon - unleaded gasoline
- 1,000 gallon - regular gasoline
- 2,000 gallon - diesel fuel

These tanks are registered with New York State Department of Environmental Conservation (NYSDEC) and leak tested annually (12).

Substation: Roth Bros. recently installed their own power substation at the southeast end of Plant 2. The substation is located immediately north of an older substation, which was

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dismantled in 1990. The new substation reportedly does not have PCB-containing oils; however, there may have been PCB-containing oils associated with the former substation. The switch gear at the former substation was reported to have leaked in the past (1). H&A observed stained concrete on the old transformer pad.

Plant 2 - Southwest Corner: An area in the southwest corner of Plant 2 was reported to have had oil seeps close to the ground surface in the past (9). Apparently, the seeps were associated with water entering the south bank of a former open ditch. Oil seeps have not been observed at the ground surface since the ditch was converted to an underground drainage pipe (9).

Outfall 001: Outfall 001 is located along the west edge of the Plant 2 property (see Figure 2) and is part of the SPDES outfall system. Outfall 001 collects discharges primarily from the western and southern portion of Plant 2. There is an open ditch north of the outfall, as shown on Figure 2. The ditch appears to pond up at the northwest end of the property; a clear outlet from the ponded area is currently not discernible. As shown in the aerial photographs, the east-west ditch covered by the fill area may have historically been the outlet for the 001 outfall drainage.

Outfall 002: SPDES Outfall 002 is located along the east side of Plant 2, near the split for the railroad spur that leads to Plant 2. Outfall 002 receives runoff from the majority of Plant 2, including the parking area at the south end of the site. It also receives discharges collected from the western portion of Plant 1.

Off-site, potential sources of oil and hazardous materials were observed as follows:

- Oberdorfer Foundry is located on Thompson Road adjacent to Plant 2 on the east. Oberdorfer manufactures aluminum castings and centrifugal pumps. The foundry is listed on the NYSDEC Registry of Inactive Hazardous Waste Sites. Reportedly, the foundry disposed of spent core sand, refractory linings, air control equipment and air control equipment dust (8). These sands are located east of Plant 2, approximately 150 to 200 ft. from the Plant 2 property line, across the railroad tracks. The DEC's investigation conducted in 1979 indicated there were no phenols in excess of applicable water quality standards for surface water samples obtained. Further NYSDEC investigations regarding groundwater or other sampling were not evaluated for the current investigation (8).

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- West and north of Plant 2 property, there is an industrial park with businesses including a pattern maker, Ashland Chemicals, Georgia Pacific, Metal Specialty Corporation and Union Carbide-Linde Division (gas products), as well as other businesses.

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IV. SUBSURFACE INVESTIGATIONS

Based on H&A's review of past site usage and on information provided by Roth Bros. and NHDD, a limited site exploration and sampling program was conducted to further evaluate the potential presence of oil and hazardous materials at the site locations described above. Site geologic conditions, investigations and environmental sampling are discussed in more detail below.

4-01. REGIONAL GEOLOGIC CONDITIONS

Bedrock which reportedly underlies the site is mapped as the Vernon Formation, composed of shale and dolostone of the Upper Silurian (10).

Unconsolidated deposits which are mapped in the site vicinity include lacustrine silt and clay. These lacustrine deposits are typically composed of laminated clay and silt size particles deposited in proglacial lakes (11).

Surface water drains from the site toward the northeast to the South Branch of Ley Creek. The South Branch discharges into Ley Creek, approximately 6500 ft. northwest of the site. Groundwater was encountered at relatively shallow depths below ground surface in site overburden in the test pits performed. Based on these observations and prevailing surface water flow directions, it is likely that shallow groundwater also flows northeasterly. Groundwater monitoring wells would be required to confirm this.

4-02. SITE SUBSURFACE CONDITIONS

Subsurface explorations for the purpose of subsurface characterization of the site and obtaining samples for laboratory analyses consisted of test pits, surface soil sampling and stream sediment sampling. Test pit excavation was performed by Parratt Wolff, Inc. of Syracuse, New York on 22, 23 and 24 August 1990 under the observation of H&A of New York personnel. The equipment used for excavation was a John Deere 410-D rubber-tired backhoe. All test pits were backfilled with the excavated materials and compacted upon completion of logging of the soil strata and soil sampling. Exploration locations are shown on Figure 3, a summary of the test pit data is presented in Table I, and a summary of surface and stream sediment sampling is presented in Table II. Test pit logs are contained in Appendix A.

Brief discussions of the subsurface explorations conducted, conditions encountered, and sampling and analyses for each area are presented below.

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4.2.1 Fill Area

A total of 18 test pits, designated TP01 through TP18, were excavated in the fill area at the north end of Plant 2. A grid pattern of excavation locations was established in accordance with USEPA guidance for screening of unknown fill areas. The test pits were arranged in an approximate 100 ft. x 100 ft. grid pattern in order to maximize coverage of the fill area. They were excavated to depths ranging from 5.5 to 10.0 ft.

Fill was encountered to depths ranging from 2.0 to 6.0 ft. The fill encountered typically consisted of granular materials (gravel, sand and some silt) with or without brick, wood, concrete, asphalt, cinders, and scrap metal in amounts up to approximately 20%. Ash, which typically contains metals, was encountered in TP01 in the southeastern corner of the fill area.

The natural materials underlying the fill consisted of lacustrine silt and sand. A 0.2 ft. to 1.0 ft. thick layer of dark brown to black organic silt was encountered in 4 test pits at the upper portion of the lacustrine deposits. Glacial till was encountered below the lacustrine deposit, at a depth of 5.0 ft. in TP05, located at the southwestern portion of the fill area.

4.2.2 Truck Maintenance Area

A total of 3 test pits, designated TP22 through TP24, were excavated in the truck maintenance area. These test pits were advanced to a depth ranging from 3.5 ft. to 4.0 ft. Fill was encountered to a depth of 1.0 ft. to 1.5 ft. and consisted of granular sand and gravel with cinders and asphalt.

Lacustrine sand and silt was encountered below the fill. A 1.0 ft. layer of gravelly sand, interpreted as fluvial in origin, was observed to be overlying the lacustrine deposit in TP23.

4.2.3 SPDES Outfalls

A total of 10 sediment samples, 5 each from SPDES Outfall drainage ditches 001 and 002, were collected and submitted to General Testing Corporation for analysis. Outfall 001 drainage ditch discharges into a ponded area approximately 500 ft. north of the outfall. Aerial photos indicate that a continuation of this drainage ditch, trending east across the site from where it is currently ponded, previously discharged into the Outfall 002 drainage ditch, as shown on Figure 2. This connecting ditch has since been filled.

Sediment collected from the Outfall 001 drainage ditch was mainly composed of organic silt. Cinder and brick particles were observed in the ponded area. An oily residue was noted in the sediment samples and oily sheen formed on the water when sediment was disturbed.

The Outfall 002 drainage ditch discharges into South Branch of Ley Creek and trends north along the property boundary. Samples were collected along this drainage ditch along the Roth Bros. property line. Sediments consisted of dark brown oil-stained organic silt. A petroleum-like odor was noted during the sampling event and an oily sheen formed on the water when the sediment was disturbed.

4.2.4 Lead Smelt Baghouses

A total of 3 soil samples (LBS-1, LBS-2, LBS-3) was collected west of the fenceline near the lead smelt baghouses along the west property boundary. A small pit, approximately 1 ft. in diameter, was then excavated by hand using a shovel to a depth of 1.5 ft. The bottom 1.0 ft. of the excavation was sampled for submission to the laboratory. Soil encountered in this area was composed of granular fill, ranging from gravelly silt to sandy gravel (Table II).

4.2.5 Former Substation

One sample (TSS-1) was collected at the site of the former substation. This sample was obtained from the gravel fill immediately adjacent to the concrete pad that served as the old transformer platform. The sample interval was from 0.5 to 1.0 ft. below ground surface.

4.2.6 Plant 2-Southwest Corner

One test pit, designated TP25, was completed in the southwestern corner of the site, where oil seeps had been reported along a former drainage ditch. This test pit was excavated to a depth of 4.0 ft. Granular fill (gravelly sand) was encountered to a depth of 2.0 ft. The soil sample was collected from 1.5 to 2.0 ft. Lacustrine silt and sand was encountered below the fill at 2.0 ft. Visible evidence of oil-staining was not apparent in the exposed soil layers at TP25.

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V. CHEMICAL ANALYSES

5-01. SAMPLE LOCATIONS, COLLECTION AND HANDLING

Sample locations are shown on Figure 3. A summary of the test pit data, including sample numbers and depths, is presented in Tables I and II.

In the fill area, 12 test pits were randomly preselected for sample submission to the analytical laboratory using random number generation to identify test pits which would be sampled for lab analysis. Random selection by this method is recommended USEPA procedure for screening of uncontrolled fill areas as it prevents bias in the sample selection process. Samples were obtained from the backhoe bucket after excavating from the desired sampling depth.

In the truck maintenance area and southwest corner of Plant 2, soil samples were obtained from the backhoe bucket after excavating from the desired sampling depth. The bottom 0.5 ft. of the fill layer was selected for sampling.

Stream sediment samples were collected from the furthest downstream location toward the upstream locations. Samples were collected either directly into the sample jar by holding the jar so that it faces upstream or by using a shovel to obtain sediment from deeper areas of the stream.

Samples from the lead smelt baghouse area, the former substation, the Plant 2 background and the native soil locations were collected by hand using a shovel. The shovel was decontaminated between each sample location. Care was taken to collect the sample from materials which did not come in contact with the shovel.

Following sample collection, samples were labelled and chilled until delivery to General Testing Corporation of Rochester, New York for subsequent analyses.

5-02. QA/QC PROCEDURES

A quality assurance/quality control (QA/QC) program was established for field collection and laboratory analyses of samples obtained at the site.

One field duplicate sample was collected for each of the four areas and soil/fill types sampled. Field duplicate sample analytical results are presented in Table III with the site analytical results. Sample duplicates are as follows:

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V. CHEMICAL ANALYSES

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- o TP12 - Fill Area
- o TP24 - Truck Maintenance Area
- o SDS-1-1B - Outfall 001
- o LBS-1B - Lead Smelt Baghouses

Field cleaning blanks (rinsate blanks) were collected using the same handling techniques as other samples. Deionized water, supplied by General Testing Corp., was poured over the sampling implement following decontamination. Field blanks are used to assess the potential introduction of contamination during sample collection and analyses.

Chain-of-custody forms were completed following sample collection, and the forms accompanied the samples to the laboratory. The chain-of-custody forms may be found in Appendix B along with laboratory reports. Following collection, and during shipment, the samples were kept chilled in coolers.

5-03. LABORATORY CHEMICAL ANALYSES RESULTS

Soil and sediment samples, as well as rinsate blanks, were submitted to General Testing Corporation for laboratory analyses. Each sample was analyzed for the following parameters:

- o Total Metals (related to Plant 2 operations) - lead, chromium, cadmium
- o Toxicity Characteristic Leaching Procedure (TCLP) Metals - lead, chromium, cadmium
- o Polychlorinated biphenyls (PCBs)
- o Grease and Oil

The results of the laboratory analyses are presented in Appendix A and are summarized on Table III. Concentration criteria were selected to allow comparison of detected lead, chromium, cadmium and PCBs. Such criteria are identified as follows:

- o TCLP Metals - The USEPA has established concentrations which may be present in leachate from the TCLP analyses as a basis for determining characteristically hazardous material from non-hazardous. The established concentrations are as follows:

  Lead - 5.0 ppm or greater
  Chromium - 5.0 ppm or greater
  Cadmium - 1.0 ppm or greater

- o Total Metals - The USEPA has not currently established a total lead standard for soil, however, an action level of 500 ppm has been reported at cleanup sites under NYSDEC review (14). A 1000 ppm action level has been reported at

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superfund sites, in EPA's biogenetic model, in Center for Disease Control policy and by the State of Minnesota (temporary standard) (15). To be conservative and in line with potential NYSDEC requirements, the 500 ppm concentration was used as a comparison criteria for total lead.

For total chromium, the USEPA Health-based criteria of 400 ppm for systemic toxicants was used for comparison (13).

There is currently no recommended USEPA criteria for total cadmium.

- o PCBs - The USEPA has established a range of total PCB concentrations, based primarily on land use and potential for human exposure as a basis for comparing PCB data (16). Concentrations less than 10 ppm total PCB are generally considered acceptable at most locations. A range between 10 and 25 ppm is the comparison criteria where residential/commercial land use prevails and 25 ppm (or lower) is generally acceptable in the industrial areas. As the site is industrial and surrounded by industrial businesses, the 25 ppm comparison criteria was selected.

5.3.1 Fill Area

Twelve of the eighteen test pits from the fill area were randomly selected for subsequent laboratory analyses. Of these twelve, eight test pits (TP03, TP05, TP06, TP07, TP08, TP09, TP10, and TP11) had lead (total) concentrations below 500 ppm. TP01, TP02, TP12 and TP18 had concentrations ranging from 2980 ppm to 25,100 ppm total lead, above the comparison criteria of 500 ppm. The highest concentrations were in TP01 (10,900 ppm), TP02 (25,100 ppm) and TP12 (10,400 to 14,300 ppm).

Chromium (total) concentrations for test pits in the fill area ranged from 13.2 ppm to 282.0 ppm. They were below the USEPA health-based criteria of 400 ppm for systemic toxicants for soils (13).

Cadmium (total) was detected at concentrations ranging from 1.48 ppm to 53.8 ppm in the test pits samples analyzed. There is no health-based criteria for cadmium in soils.

TCLP analyses of test pit samples resulted in detection of lead levels, in excess of the USEPA threshold of 5 ppm in two samples, TP06 and TP07. Cadmium and chromium TCLP results were all less than the applicable USEPA thresholds.

FOIL204099

PCB analysis resulted in detection of PCBs at nine locations, one of which exceeded the USEPA cleanup criteria of 25 ppm. The detection was at location TP07, which also has elevated TCLP lead (Table III and Figure 3).

5.3.2 Truck Maintenance Area

Three soil samples plus one duplicate were collected from the test pits behind the truck maintenance area and designated TP-22 through TP-24. Total lead concentrations from these samples ranged from 1,160 ppm to 8460 ppm, above the 500 ppm criteria. Total chromium concentrations ranged from 84 to 108 ppm below the EPA health-based criteria of 400 ppm. Total cadmium concentrations detected ranged from 14.6 ppm to 63.2 ppm.

TCLP analyses for metals for samples collected from the maintenance area did not exceed USEPA criteria for TCLP hazardous characteristic.

Oil and grease analyses ranged from 3075 to 22,600 ppm in the maintenance area. This represents the highest concentration range of the areas sampled, which is consistent with the oily staining observed in these area soils.

5.3.3 SPDES Outfall 001

Five sediment samples (SDS-1-1 through SDS-1-5) were collected from the drainage ditch at 100 ft. intervals along the western property boundary. SDS-1-1 was the furthest downstream sample collected; SDS-1-5 was the sample nearest the SPDES Outfall 001. Total lead concentrations ranged from 214 ppm in SDS-1-5 to 5240 ppm in SDS-1-3. Three locations had lead concentrations greater than 500 ppm.

The total chromium detected ranged from 19.7 to 157 ppm. Concentrations detected fall below the EPA health-based criteria for chromium in soils.

The total cadmium detected ranged in concentration from 5.19 to 68.6 ppm.

TCLP analyses of Outfall 001 samples resulted in detection of lead TCLP results above USEPA criteria at two locations. Sample SDS-1-1A and SDS-1-1B represent duplicates; split samples obtained from the same location. TCLP lead is detected at 36.2 ppm in split 1B

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and 17.7 ppm in split 1A. This sample location is located furthest from the outfall source. The second sample with high TCLP lead was SDS-1-5, located near the outfall source.

Grease and oil results for Outfall 001 ranged from 641 to 5750 ppm.

PCB analytical results ranged from non-detect to 2.350 ppm, below the USEPA 25 ppm comparison criteria.

5.3.4 SPDES Outfall 002

Five sediment samples were collected from the drainage ditch along the Plant 2 eastern property boundary. SDS-2-1 through SDS-2-5 were collected at 150 ft. intervals, in order, from the furthest downstream location to the upstream location where Outfall 002 is located. Total lead concentrations detected ranged from 384 ppm to 2060 ppm.

Total chromium concentrations detected ranged from 11.4 ppm to 22.6 ppm.

Total cadmium was detected at concentrations ranging from 7.9 ppm to 15.5 ppm.

TCLP analyses of these samples did not detect any metals concentrations in the TCLP leachate above the USEPA threshold values.

Oil and grease analyses detected concentrations ranging from 641 to 5750 ppm.

PCB analyses resulted in concentrations ranging from non-detectable to 1.330 ppm.

5.3.5 Lead Baghouse Area

Three surface soil samples plus one duplicate sample (LBS-1A and 1B, LBS-2 and LBS-3) were collected along the west side of the baghouses at the western property boundary. Total lead concentrations range from 287 ppm to 4440 ppm. Lead concentrations in the duplicate samples, 1A and 1B, were similar at 4300 and 4400 ppm, respectively, and exceed the comparison criteria.

Total chromium in samples collected from the baghouse area ranged from 9.63 ppm to 18.9 ppm.

Concentrations for total cadmium detected ranged from 5.7 ppm to 2,570 ppm. The sample LBS-1A had the highest concentration (2,570 ppm), and the duplicate LBS-1B had a concentration of 36.5 ppm.

TCLP analyses on the baghouse area samples resulted in one detected concentration above USEPA thresholds. Sample LBS-3 yielded a lead TCLP result of 5.070 ppm which is just above the 5 ppm criteria. This sample was obtained from a location approximately 75 ft. from the lead dross shed.

Grease and oil results ranged from 510 to 2230 ppm in baghouse samples.

PCB results for the baghouse samples were below the 25 ppm comparison criteria.

5.3.6 Former Substation

One sample set TSS-1 was collected from the former substation. No TCLP values exceeded USEPA thresholds. The grease and oil concentration was elevated (as compared to the other site samples) at 28,800 ppm; however, PCB concentrations in the sample were only 0.588 ppm, two orders of magnitude below the USEPA threshold.

5.3.7 Plant 2-Southwest Corner

One soil sample (TP-25) was collected from the suspected oil seep area at the southwest corner of Plant 2. Total lead and total chromium concentrations of 72.7 ppm and 13.4 ppm, respectively, were reported. Total cadmium was detected at 1.36 ppm.

TCLP and PCB analyses resulted in detected levels below applicable USEPA criteria. Oil and grease values were low (166 ppm) compared to other areas sampled at Plant 2.

5.3.8 Background/Native Soil

One background sample (SGB-1) was collected from the south end of Plant 2. Three native soil samples (NGB-1, NGB-2 and NGB-3) were collected from the north end of Plant 2 at the edge of the wooded area. TCLP and PCB values were non-detect. Oil and grease concentrations were 270 ppm.

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5-04. DISCUSSION

Metals

Laboratory analytical results from samples collected on Plant 2 property generally indicate the presence of total lead at elevated concentrations.

The total metal concentrations for cadmium, chromium and lead have been plotted for the fill area, Outfall 001 and Outfall 002 and are shown on Figures 4, 5 and 6. As can be seen from the graphs, in general there appears to be a correlation between the relative concentration of metals; that is, the concentrations of cadmium and chromium tend to rise and fall as the concentration of lead rises and falls. This is particularly notable in Outfall 002 (Figure 6) and is generally the case for the Plant 2 fill area (Figure 4). However, the correlation does not hold true for all samples as is demonstrated in Outfall 001 (Figure 5). It can be concluded from this that the sources of elevated metals in the fill area and Outfall 002 are likely similar or the same.

In order for a sample to fail TCLP analysis the metal of concern must be present in sufficient concentration and in the appropriate chemical form to allow dissolution and leaching by the acidic solution used for the TCLP procedure. Although elevated concentrations were present in most samples, only selected samples (with relatively low concentrations) were leachable by the TCLP procedure.

The concentrations of lead by the TCLP method have been plotted to see if a correlation exists between total lead concentrations and TCLP lead concentrations. The TCLP plots may be seen on Figures 7, 8 and 9 for the fill area and Outfalls 001 and 002, respectively.

In the fill area, high total lead concentrations were generally found in TP01, TP02 and TP12. Concentrations exceeding the TCLP threshold for lead (5.00 ppm) were located in TP06 and TP07. A similar case may be seen for the Outfalls 001 and 002. In summary, there does not appear to be a correlation between the high lead (total) and high TCLP lead values.

It was observed that several of the test pits contained cinders and soil fill associated with concrete and asphalt. Cinders typically contain high concentrations of metals, occasionally up to a percent level. Lead, when contained in cinders is typically in a silicate oxide form which strongly resists re-speciation as would be necessary for TCLP leaching. Based on observations made of test pit soils and fill, it is H&A's opinion that the elevated metals concentrations are associated, at least in part, to the type of fill constituents encountered.

An additional common source of heavy metals in soil and sediment is deposition and runoff of airborne urban industrial and automobile emissions. Lead and cadmium are commonly associated with automobile emissions, and all three metals (lead, cadmium and chromium) result from industrial sources (13). Precipitation events and particularly roadway/parking lot snow melt tend to flush high concentrations of these metals toward parking lot edges and along drainage swales. It is apparent that shallow samples from the outfalls and possibly fill area samples (where associated with asphalt) have metals concentrations that may have been influenced by such processes.

Oil and Grease

For the grease and oil analyses conducted, the background/native soil concentrations ranged from 137 ppm to 1605 ppm. These concentrations were exceeded in:

- TP18 (5434 ppm) from the fill area;
- LBS-3 (2230 ppm) from the baghouse area;
- the maintenance area (3075-22,600 ppm);
- SDS-1-5 (5750 ppm) from the ditch at Outfall 001;
- TSS-1 (28,800 ppm) from the former transformer location.

Oil sheens or stains were noted at few locations sampled including the Outfalls (001 and 002), the maintenance area, and the transformer area. These areas tended to have slightly higher average oil and grease values than other areas sampled, corresponding to the observable staining. It should be noted however, that the gravimetric laboratory analysis detects both man-made and naturally occurring oils, greases and fats. Vegetative and animal matter can result in elevated concentrations where a man-made oil or grease source doesn't exist. Based on observations of wood and other vegetative material in some of the areas explored, it is apparent that the oil and grease results obtained indicate a petroleum oil presence only in the selected areas described above where oil staining was evident.

PCB concentrations, where detected, generally did not correspond to higher oil and grease values. In particular, some of the highest oil and grease values corresponded to low or non-detectable PCB concentrations.

PCBs

Detected PCB concentrations exceeded USEPA criteria at one location (TP-07) in the fill area. This sample also had a high TCLP lead value.

VI. CONCLUSIONS AND RECOMMENDATIONS

Based on the scope of work performed for this investigation, the following conclusions and recommendations with respect to potential occurrence of oil and hazardous materials at this site have been made:

Maintenance Area - Oil stained soils were observed in several areas on the ground surface and in test pits. Oil and grease concentrations detected in this area were, on the average, higher than other areas explored. The stained soils did not have PCB concentrations in excess of USEPA criteria therefore they would likely be classified as a non-hazardous solid waste, provided they don't fail an ignitability analysis. This investigation was not intended to evaluate presence of petroleum on groundwater; based on H&A's observations this possibility exists.

It is therefore recommended that two to three shallow borings be placed in this area to evaluate depth of staining. If petroleum appears to exist into water saturated materials the borings should be converted to wells to evaluate product thickness and possible extent. If removal of stained soils is desired by Roth, then disposal at a NYSDEC permitted sanitary landfill should be possible.

Substation Area - Although oil stains were evident in this area and detected oil and grease values were relatively high, the sample obtained from the stained area did not have PCB concentrations in excess of USEPA criteria. No further recommendations are made for this area.

Fill Area - Sampling to date has detected elevated concentrations of lead although it is apparent from TCLP analyses performed that there is no correlation between high total lead levels and leachability. Only leachable lead was detected in an area of the fill approximately 150 x 250 $\pm$ ft. in size, located northeast of Plant 2. It is apparent that the lead detected through TCLP analyses is likely related to an industrial source, as industrially derived lead, which has not re-speciated to a stable carbonate (or other) form and tends to be more soluble than natural forms or re-speciated forms of lead.

It was noted in review of aerial photos that additional fill, which was not explored in this investigation, may be present beneath the pavement north of Plant 2.

Based on the above findings, it is recommended that the grid exploration program be extended south into the current paved area. Sampling should be performed on a similar grid with random sample selection. Sampling should also be repeated in some already-explored areas to allow sample comparison for total and leachable lead. Review of chemical properties at baghouse dust with Roth Bros. personnel will be necessary to develop a method to distinguish industrial/leachable lead in samples from natural or stable re-speciated forms.

Leachable (or soluble) lead may be subject to migration to site groundwater. Therefore, to determine if groundwater has been affected, 3 to 4 of the borings in the grid should be converted to groundwater monitoring wells and sampled for lead (total and soluble), related metals, and PCBs. One to two of these wells would be best located in the area currently known to have high TCLP values (near TP-07).

Baghouse/Outfall 001/Dross Area - As with the fill area total lead concentrations were elevated, however this again bore no relationship to TCLP leachability. It is notable that the nearest Outfall 001 sample also contained a high lead TCLP, and that historically this outfall received drainage from a north-south oriented ditch that ran past the baghouse area. It is apparent, therefore, that leachable lead results for this area are likely related to a common or similar source(s).

It is recommended that a grid sampling program be established for this area, similar to the Plant 2 fill area. Intent of the program would be further determination of apparent source area(s) and its (their) extent. Sample selection, analyses and installation of groundwater wells would be performed in a manner similar to the fill area.

Summary - In summary, two occurrences of oil and hazardous materials were identified during this investigation. Oil stained soils in the maintenance area appear to constitute a solid waste. Presence of oil on groundwater is currently unknown but may be evaluated with implementation of the recommendations described above.

Fill and sediment which appears to be characteristically hazardous by TCLP lead criteria and/or the presence of PCBs above 25 ppm is present in two areas of the plant. Additional evaluation is required to better determine the source(s), apparent extent and whether groundwater has been affected. Again, recommendations are provided above to initiate such evaluation.

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FOIL204106

REFERENCES

1. H&A of New York personal communication with Mr. Neal Schwartz, General Manager, Roth Bros., 20 August 1990.

2. H&A of New York review of photographs from Roth Bros. Smelting Corp. offices, 23 August 1990.

3. "The Roth Report", Roth Bros. Smelting Corp., Fall 1987.

4. H&A of New York review of aerial photographs for 1978, U.S. Agricultural Stabilization and Conservation Service, Onondaga County, 23 August 1990.

5. H&A of New York review of aerial photographs for 1966, U.S. Soil Conservation Service, Onondaga County, 23 August 1990.

6. H&A of New York review of aerial photographs for 1981 and 1985, Onondaga County Planning Department, 23 August 1990.

7. H&A of New York review of aerial photographs for 1959, Onondaga County Department of Transportation, 23 August 1990.

8. "Inactive Hazardous Waste Disposal Sites in New York State", New York State Department of Environmental Conservation, Volume 7, April 19990.

9. H&A of New York personal communication with Mr. Frank Myer, Plant Engineer, Roth Bros., 21 August 1990.

10. "Geologic Map of New York - Fingerlakes Sheet", NYS Museum and Science Service, 1970.

11. "Surficial Geologic Map of New York - Fingerlakes Sheet", NYS Geological Survey. 1986.

12. H&A of New York telephone conversation with Mr. Neal Schwartz, General Manager, Roth Bros. Smelting Corp., 12 September 1990.

13. "Health and Environmental Assessment", USEPA RCRA Facility Investigation Guidance, Volume I of IV, EPA 530/SW-87-001A, July 1987, Section 8, Interim Final, revised May 1989.

14. H&A of New York telephone conversation with Mr. Robert Hall, Bureau of Eastern Remedial Action, Division of Hazardous Waste Remediation, NYSDEC, 1 March 1991.

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REFERENCES
(con't)

15. "The Nature and Extent of Lead Poisoning in Children in the United States: A Report to Congress", Agency for Toxic Substances and Disease Registry, U.S. Dept. of Health and Human Services, July 1988.

16. PCB Spill Cleanup Policy, EPA 40 CFR, Part 761, 1987.

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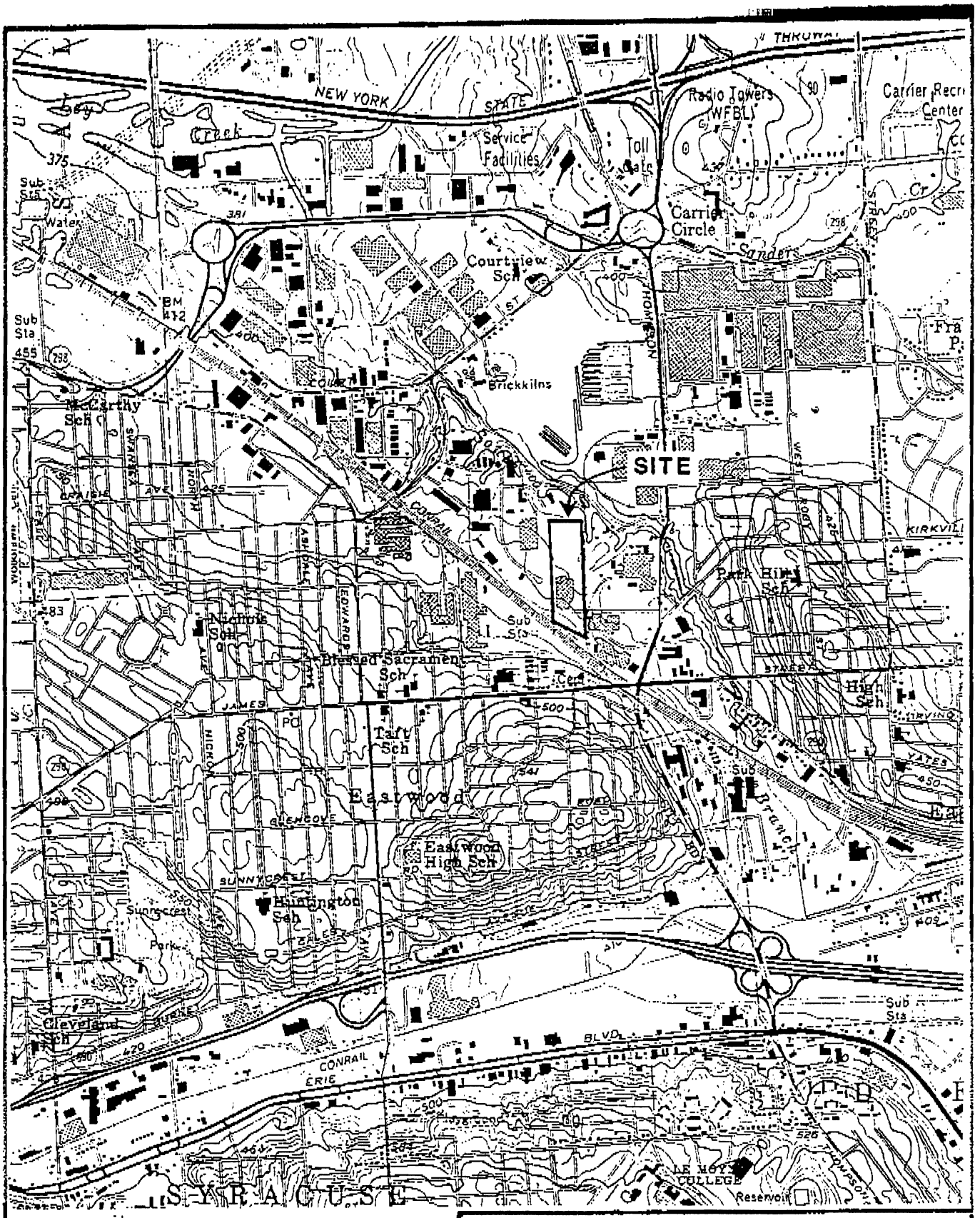
ROTH BROS. SMELTING CORPORATION

SUMMARY PACKET

NYSDEC MEETING 30 MAY 1991



H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

ROTH BROS. SMELTING CORP.
SYRACUSE, NEW YORK

PROJECT LOCUS

SCALE: 1 IN. = 2000 FT.

MAY 1991

FOIL 204110

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CHARRETTE

FIGURE 1

TABLE I

ROTH BROS. SMELTING CORP.

SUMMARY OF SAMPLE COLLECTION

(Page 1 of 2)

LOCATION	EXPLORATION NUMBER	FILL DEPTH (FT.)	SOIL SAMPLE	DUPLICATE	METALS, PCBs ANALYSES	LEAD ISOTOPE	TOTAL ORG. CARBON	CATION EXCH CAPACITY
PAVED FILL AREA	B201	0–3.0	X	X	X			
	B202	0–3.4	X		X			
	B203	0–3.2						
	B204	0–3.3						
	B205	0–4.1	X		X			
	B206	0–3.1	X		X			
	B207	0–3.0						
	B208	NE						
	B209	0–3.5	X		X			
	B210	0–3.0	X	X	X			
	B211	0–2.0						
	B212	0–3.1	X		X			
	B213	0–2.5	X		X			
	B214	0–2.8	X		X			
	B215	0–2.8	X		X	X	X	X
	B216	0–3.0	X		X			
	B217	0–2.5	X		X	X	X	X
	B218	0–3.5	X		X			
	B219	0–2.0	X		X			
	B220	0–2.7	X		X	X		
	B221	0–2.3	X		X			
	B222	0–2.1						
	B223	0–2.7	X		X			
	B224	0–3.0						
	B225	0–3.0	X		X			
	B226	0–2.5	X		X			
	B227	NE						
	B228	0–1.2	X		X	X	X	X
	B229	0–3.5	X		X			
	B230	0–3.0						
	B231	0–3.3	X		X			
	B232	0–2.6						
	B233	0–2.7	X		X			
	B234	0–5.0**	X		X			
	B235	0–4.4						
	B236	0–2.4						
	B237	0–4.8	X		X			
	B238	0–3.2	X		X			
	B239	0–5.1	X		X			
	B240	NE						
	B241	0–5.0	X		X			
	B242	0–5.0**						
	B243	0–5.2	X		X			
	B244	0–5.0						
	B245	0–3.5	X		X			
	B246	0–4.3	X		X			
	B247	0–3.5	X		X			
	B248	0–2.0						
	B249	0–2.0						
	B250	0–2.5	X		X			
	B251	0–3.0	X		X			
	B252	0–5.5	X		X			
	B277–OW	0–0.5						

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TABLE I

ROTH BROS. SMELTING CORP.

SUMMARY OF SAMPLE COLLECTION

(Page 2 of 2)

LOCATION	BORING NUMBER	FILL DEPTH (FT.)	SOIL SAMPLE	DUPLICATE	METALS, PCBs ANALYSES	LEAD ISOTOPE	TOTAL ORG. CARBON	CATION EXCH CAPACITY
BAGHOUSE AREA	B253	NE	X	X	X			
	B254	NE	X		X			
	B255	NE						
	B256	0–7.8						
	B257	NE						
	B258	0–2.3						
	B259	0–3.0						
	B260	0–2.0	X		X			
	B261	0–2.0						
	B262	0–2.1						
	B263	0–1.5	X	X	X			
	B264	0–1.9	X		X			X
	B265	0–2.3	X		X			
	B266	0–1.3	X		X			X
	B267	NE						
	B268	0–3.0	X		X			
	B269	0–2.4	X		X			
	B270	NE						
	B271	0–3.0						
	B272	0–2.8	X		X			
	B273–OW	0–5.3	X		X			
	B274	0–1.8						
	B275	0–2.5	X		X			
	B276	0–3.3	X		X			
FILL AREA	B278–OW	0–3.0	X		X			
	B279–OW	0–2.0						
	B280–OW	0–1.0						
SOUTHWEST END OF PLANT 2	B281–OW	0–2.2						
LBS-3 AREA	B282	0–2.0**	X		X		X	X
	B283	0–2.0**	X		X			
	B284	0–2.0**	X		X		X	X
	B285	0–4.2**	X		X			
NEAR OUTFALL 001	B286–OW	0–0.5						
MAINTENANCE AREA	B287–OW	NE						
	B288	NE						
	B289	0–3.5						
	B290–OW	0–2.3						
TRENCHES IN FILL AREA	TP201	0–1.5	X		X		X	X
	TP202	0–3.5	X		X		X	X
STORM SEWER DISCHARGE *	SDS–1–6		X		X		X	
	SDS–1–7		X		X		X	
	SDS–1–8		X		X		X	

NOTES:

1. –OW indicates observation well installed in completed borehole.
2. See Appendix A for Test Boring Reports.
3. See Tables III and IV for summary of laboratory analytical results.
4. * Indicates sample collected from storm sewer manholes.
5. NE = Fill was not encountered in the exploration.
6. ** Indicates bottom of fill was not encountered during exploration.

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TABLE II
ROTH BROS. SMELTING CORP.
LEAD ISOTOPE SAMPLE SUMMARY

LOCATION	SAMPLE NUMBER	LEAD CONCENTRATION	REMARKS
PAVED FILL AREA	B215	8220 PPM	ORIGINAL SAMPLE, pH 8.7
	B215	7.88 PPM	LEACHATE, pH<2
	B217	33.4 PPM	ORIGINAL SAMPLE, pH 9.4
	B217	ND	LEACHATE, pH<2
	B220	3740 PPM	ORIGINAL SAMPLE, pH 9.3
	B220	0.79 PPM	LEACHATE, pH<2
	B228	10300 PPM	ORIGINAL SAMPLE, pH 9.5
	B228	29.2 PPM	LEACHATE, pH<2
NATIVE SOIL	NGB–1	6 PPM	ORIGINAL SAMPLE
	NGB–2	15 PPM	ORIGINAL SAMPLE
LEAD DUST COMPOSITE	LDC–1	approx. 20%	LEAD DUST COLLECTED FROM HAZ. WASTE STORAGE BINS IN BAGHOUSE ALONG WEST PROPERTY BOUNDARY.
STACK SAMPLE	STACK #1	NAV	STACK SAMPLES WERE COLLECTED BY UPSTATE LABORATORY
	STACK #2	NAV	ON GLASS FIBER FILTERS WITH A 99.96% COLLECTION
	STACK #3	NAV	EFFICIENCY DOWN TO PARTICLE SIZE OF 0.3 MICRONS.
	STACK #4	NAV	
	STACK #5	NAV	
	FILTER BLANK	NAV	BLANK FOR QUALITY CONTROL

NOTES:

1. NAV = Data not aavailable.
2. PPM = Part per million.
3. See Table V for lead isotopic analyses data; see Figure 5 for plot of data.

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TABLE III

ROTH BROS. SMELTING CORP.
PLANT 2

SUMMARY OF LABORATORY ANALYTICAL DATA
SOIL/FILL SAMPLES

(page 1 of 2)

LOCATION	SAMPLE NO.	DEPTH IN FEET	LEAD TOTAL	LEAD TCLP	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260	PCB TOTAL	pH VALUE	TOC	CEC
PAVED FILL AREA	B201-S1A	0.9-2.9	105	0.372	ND	ND	16.4	ND	ND	16.4	6.2		
NORTH OF PLANT 2	B201-S1B	0.9-2.9	68.2	0.461	ND	ND	23.9	ND	ND	23.9	7.4		
	B202-S1	1.0-3.0	575	1.49	ND	ND	82.7	ND	ND	82.7	9.2		
	B205-S1	1.0-3.0	131	0.226	ND	ND	13.5	ND	ND	13.5	8.3		
	B208-S1	1.0-3.0	2240	ND	ND	ND	20.6	ND	ND	20.6	8.9		
	B209-S1	1.0-3.0	302	0.383	ND	ND	1.4	ND	ND	1.40	9.0		
	B210-S1A	1.5-3.5	557	2.36	ND	ND	ND	3.70	ND	3.70	6.8		
	B210-S1B	1.5-3.5	6940	2.48	ND	ND	ND	3.73	ND	3.73	8.9		
	B212-S1	1.0-3.0	5.90	ND	ND	ND	0.025	ND	ND	0.025	9.5		
	B213-S1	1.0-3.0	35.3	ND	ND	ND	0.026	0.146	ND	0.172	8.7		
	B214-S1	1.0-3.0	231	ND	ND	ND	0.071	0.131	ND	0.202	8.9		
	B215-S1	1.0-3.0	6220	7.88	ND	0.550	ND	0.760	ND	1.31	8.7	1.47	4.14
	B216-S1	1.0-3.0	366	2.92	4.23	ND	ND	1.44	ND	5.67	8.4		
	B217-S1	1.0-3.0	33.4	ND	ND	ND	ND	0.238	ND	0.238	9.4	2.38	18.1
	B218-S1	1.0-3.0	124	4.54	ND	ND	1.89	1.53	ND	3.42	8.85		
	B219-S1	1.0-3.0	2370	7.52	ND	ND	ND	60.3	ND	60.3	9.0		
	B220-S1	1.0-3.0	3740	0.790	ND	ND	15.2	16	ND	31.2	9.3		
	B221-S1	1.0-3.0	98.9	ND	ND	ND	ND	ND	ND	0	8.9		
	B223-S1	1.0-3.0	58.7	ND	ND	ND	16.5	ND	ND	16.5	8.9		
	B225-S1	1.0-3.0	9730	ND	3.64	ND	ND	2.37	ND	6.01	9.0		
	B226-S1	1.0-3.0	314	2.11	ND	ND	0.738	1.10	ND	1.84	8.7		
	B228-S1	1.5-2.5	10300	29.2	ND	ND	0.382	0.671	ND	1.03	9.5	1.43	12.3
	B229-S1	1.0-3.0	156	0.730	ND	ND	7.35	1.05	ND	8.40	10.1		
	B231-S1	1.0-3.0	29.9	0.195	ND	ND	0.580	0.070	ND	0.650	10.0		
	B233-S1	1.0-3.0	250	1.13	2.38	ND	ND	1.81	ND	4.19	8.7		
	B234-S1	1.0-3.0	64.3	11.0	0.236	ND	ND	0.030	ND	0.266	7.9		
	B237-S1	1.0-3.0	196	ND	ND	ND	0.512	0.643	ND	1.16	7.15		
	B238-S1	1.0-3.0	160	ND	ND	ND	1.26	0.399	ND	1.63	6.9		
	B239-S1	1.0-3.0	31.4	ND	ND	ND	ND	0.027	ND	0.027	8.4		
	B239-S2	3.0-5.0	1280	21.6	ND	ND	0.894	0.761	ND	1.66	7.2		
	B241-S1	0.5-2.5	ND	0.160	ND	ND	ND	ND	ND	0.0	8.75		
	B243-S1	1.0-3.0	40000	ND	ND	ND	0.804	ND	ND	0.804	8.95		
	B243-S2	3.0-5.0	56500	30.7	ND	ND	4.97	ND	ND	4.97	11.5		
	B245-S1	1.0-3.0	14700	ND	ND	ND	1.05	ND	ND	1.05	10.4		
	B250-S1	0.0-2.0	15000	26.0	ND	ND	1.32	3.82	ND	5.14	9.55		
	B251-S1	0.0-2.0	3570	28.0	ND	ND	6.00	3.63	ND	9.63	9.2		
	B252-S1	0.0-2.0	147	ND	ND	ND	19.5	ND	ND	19.5	11.5		
COMPARISON CRITERIA (2)			500	5.00						25			

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TABLE III
ROTH BROS. SMELTING CORP.
PLANT 2

SUMMARY OF LABORATORY ANALYTICAL DATA
SOIL/FILL SAMPLES
(page 2 of 2)

LOCATION	SAMPLE NO.	DEPTH IN FEET	LEAD TOTAL	LEAD TCLP	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260	PCB TOTAL	pH VALUE	TOC	CEC
BAGHOUSE/SCRAP	B253-S1	1.0-3.0	34.8	ND	ND	ND	ND	ND	ND	0.0	10.4		
STORAGE AREA	B254-S1	1.0-3.0	16.0	ND	ND	ND	ND	ND	ND	0.0	10.1		
	B254-S2	3.0-5.0	ND	ND	ND	ND	ND	ND	ND	0.0	8.5		
	B260-S1A	1.0-3.0	44.6	ND	ND	ND	ND	0.980	ND	0.0	7.0		
	B260-S1B	1.0-3.0	33.0	ND	ND	ND	ND	0.076	ND	.980	6.3		
	B263-S1A	1.0-3.0	17.7	ND	ND	ND	0.021	0.285	ND	.076	8.7		
	B263-S1B	1.0-3.0	63.2	ND	ND	ND	ND	ND	ND	.306	8.8		
	B263-S2	3.0-5.0	ND	ND	ND	ND	0.711	0.691	ND	0.0	8.3		
	B264-S1	0.5-2.5	29600	189	ND	ND	0.330	0.593	ND	1.402	7.6		10.2
	B265-S1	0.5-2.5	ND	ND	ND	ND	ND	0.133	ND	.973	8.2		
	B266-S1	0.5-2.5	30.0	ND	ND	ND	ND	0.031	ND	.133	8.9		6.96
	B268-S1	0.5-2.5	64.0	ND	ND	ND	ND	4.95	ND	.031	8.65		
	B269-S1	0.5-2.5	ND	ND	ND	ND	ND	ND	ND	4.95	5.9		
	B272-S1	1.0-3.0	36.3	ND	ND	ND	ND	0.267	ND	0.0	8.8		
	B273-S1	1.0-3.0	33.0	ND	ND	ND	ND	0.552	ND	.267	7.05		
	B274-S1	1.0-3.0	2980	ND	ND	ND	ND	0.517	ND	.552	10.15		
	B275-S1	1.0-3.0	152	ND	ND	ND	ND	0.060	ND	.517	9.8		
	B276-S1	1.0-3.0	350	ND	ND	ND	ND	ND	ND	.060	8.4		
FILL AREA	B278-S1	0-2.0	752	5.05	ND	ND	72.3	ND	ND	72.3	7.8		8.79
	B278-S2	2.0-4.0	120	ND	ND	ND	27.7	ND	ND	27.7	8.55		
	B278-S3	4.0-6.0	ND	ND	ND	ND	0.067	ND	ND	.067	7.2		
	TP201-J1	1.5-2.5	563	4.35	ND	ND	29.4	ND	ND	29.4	10.35	1.40	4.26
	TP201-J2	2.5-3.0	42.0	ND	ND	ND	1.62	ND	ND	1.62	10.2	ND	3.33
	TP202-J1	2.5-3.0	248	5.40	ND	ND	164	ND	ND	164	8.9		
LBS-3 AREA	B262-S1	0-2.0	1850	12.2	ND	ND	7.13	ND	ND	7.13	8.15	1.37	6.00
	B263-S1	0-2.0	2650	22.7	ND	ND	3.19	ND	ND	3.19	8.2		
	B264-S1	0-2.0	1530	14.3	ND	ND	40.1	ND	ND	40.1	8.75	1.04	6.06
	B265-S1	0-4.0	3740	21.0	ND	ND	0.447	0.803	ND	1.25	7.95		
STORM SEWER	SDS-1-6	0-0.3	26500	157	ND	ND	9.20	ND	1.72	10.92	8.9	2.15	
DISCHARGE	SDS-1-7	0-0.3	35700	74.5	ND	ND	10.3	ND	1.65	11.95	8.7	7.23	
	SDS-1-8	0-0.3	41500	135	ND	ND	1.78	ND	2.80	4.58	7.55	11.5	
COMPARISON CRITERIA (2)			500	5.00						25			

NOTES:

1. Concentrations expressed in parts per million (ppm). See also note 7.
2. Concentrations which are outlined exceed comparison criteria.
   Comparison criteria consist of: 1) Superfund Record of Decision: United Scrap Lead, OH (Sept. 1988); 1987)
   2) EPA Regulatory Levels for Toxicity Characteristics Constituents; and 3) EPA 40 CFR Part 761 PCB Spill
   Cleanup Policy 1987.
3. ND indicates analyte not detected above laboratory detection limits.
4. TCLP: Toxicity Characteristic Leaching Procedure
5. TOC: Total Organic Carbon. Analyses performed on subset of 10 samples.
6. PCB Total: Sum total of PCBs detected.
7. CEC: Cation Exchange Capacity. Analyses only performed on subset of 10 samples. Concentrations expressed in milliequivalents per 100 grams (meq/100 g).

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TABLE IV
ROTH BROS. SMELTING CORP.
PLANT 2

SUMMARY OF LABORATORY ANALYTICAL DATA
GROUNDWATER SAMPLES

WELL NO.		B273-GW	B277-GW	B277-GW DUPLICATE	B278-GW * NOV./JAN	B279-GW * NOV./JAN	B279-GW DUPLICATE	B280-GW	B281-GW	B285-GW	B287-GW	B290-DW	B291-GW	B292-GW	B293-GW	WATER QUALITY CRITERIA TOGS 1.1.1 CLASS GA GW	6 NYCRR PART 703.5 GW STDS.	10 NYCRR PART 5 DW STDS.
ALUMINUM	TOTAL	7.48	1.05	40.1	211 / 8.22	8.30 / 2.30	10.7	24.8	4.20	0.70	1.47	17.0	27.1	5.70	87.7			
	DISS.	ND	ND	ND	0.18 / 0.22	20.0 / 3.51	0.04	0.11	ND	ND	0.120	ND	ND	NO	ND	NAV	NAV	NAV
CALCIUM	TOTAL	447	877	187	180 / 34.2	44.9 / 22.9	25.6	172	197	355	420	321	177	98.2	123			
	DISS.	428	93.0	ND	6.84 / 19.6	35.4 / 25.5	27.6	97.0	190	314	464	255	94.1	65.3	70.5	NAV	NAV	NAV
IRON	TOTAL	15.9	52.5	54.7	299 / 10.2	93.1 / 55.7	44.7	23.7	3.10	7.73	1.07	27.5	662	18.5	14.8			
	DISS.	0.165 JMI	ND JMI	0.151 JMI	0.575 JMI / 0.225	39.0 JMI / 8.75	9.48	ND JMI	ND JMI	ND JMI	ND JMI	0.825 JMI	0.076	0.109	ND	0.300 TS	0.300	0.300 (A)
POTASSIUM	TOTAL	13.5	12.0	13.9	47.0 / 8.45	14.1 / 4.00	7.19	9.80	5.52	15.6	5.15	12.4	9.97	8.44	5.41			
	DISS.	9.81	15.5	1.45	1.46 / 2.94	5.04 / 4.13	5.00	0.290	3.54	10.9	5.47	4.47	1.71	2.32	3.10	NAV	NAV	NAV
LEAD	TOTAL	ND	ND	0.050	1.52 / 0.0477	0.284 / 0.293	0.212	NO	ND	ND	NO	0.039	0.0268	0.292	0.0268			
	DISS.	ND	ND	NO	ND / ND	0.117 / 0.0442	0.0197	NO	ND	ND	ND	ND	ND	NO	ND	0.025 TS	0.025	0.050
PCBs		ND (Total)	ND (Total)	ND (Total)	24.4 / ND (Total)(Diss.)	NO / ND (Total)(Diss.)	NO (Diss.)	ND (Total)	ND (Total)	NO (Total)	ND (Total)	ND (Total)	ND (Diss.)	ND (Diss.)	ND (Diss.)	0.0001 TS	0.0001	
PET. HYDROCARBON (IR)		NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	4.52	NA	NA	NA			
PET. HYDROCARBON (GC)		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA			
pH (After Devel., 1/29/91)		6.60	7.50	NA	8.5	7.9	NA	NA	7.2	7.0	7.2	7.2	7.8	8.2	7.5			
CONDUCTIVITY (1/25/91)		5700	1350	NA	3200	5100	NA	NA	2070	2650	2420	2100	1500	1900	1020			
TEMPERATURE (C - 1/24/91)		8.80	24.2	NA	20.0	14	NA	NA	23.7	22.9	17.3	12.3	NA	NA	NA			

NOTES:

1. Concentrations expressed in parts per million (ppm).
2. Concentrations which are outlined exceed water quality criteria.
3. ND indicates analyte not detected above laboratory detection limits.
4. TS = TOGS 1.1.1 Standard, See Note 7.
5. (A) Total concentration of Iron and Manganese should not exceed 500 ug/l (0.500 ppm).
6. NAV = Data not available
7. Water quality criteria references:
   TOGS 1.1.1: NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1), "Ambient Water Quality Standards and Guidance Values, April 1, 1987, NYSDEC Memorandum,
   NYCRR, Title 6, Chapter X, "Water Quality Regulations - Surface Water and Groundwater Classifications and Standard", Part 703, Paragraph 703.5, NYSDEC, Revised March 31, 1990,
   NYCRR, Title 10, Part 5, "Regulations for Drinking Water Supplies", NYSDOH.
8. Total samples were not filtered and contained sediment. Dissolved (Diss.) samples were field filtered.
9. JMI = Indicates an estimated value due to matrix spike and/or matrix spike duplicate outside control limits. Matrix interference suspected; repeat analysis still unacceptable.
10. NA = Indicates sample not analyzed.
11. pH and Conductivity analyzed on 29 January 1991 by H&A of New York personnel.
12. * = Indicates well was sampled during two events. Data presented shows results from both events.

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